Amendments to the Specification:

On page 1, immediately following the heading "TITLE" and before the heading "Specification", please delete the title and insert in lieu thereof the following new title:

METHOD AND APPARATUS FOR OPTICALLY READING INFORMATION

Please delete the paragraph located on page 9 at lines 14-16 of the specification and insert in lieu thereof the following amended replacement paragraph:

FIGS. [[32 and]] 33 and 34 correspond with the fourteenth and fifteenth figures of the PCT international application published as WO 90/16033 on December 27, 1990 and which has been incorporated herein by reference;

Please delete the paragraph located on page 9 at lines 17-20 of the specification and insert in lieu thereof the following amended replacement paragraph:

FIG. [[34]] 35 shows a scanner of the type shown in FIGS. [[32 and]] 33 and 34 mounted on a vehicle by means of a universal mount of the type shown in the eighteenth figure of the incorporated application USSN 07/347,602, (such universal mount being per se covered by USPN 2,898,068);

Please delete the paragraph located on page 9 at lines 21-24 of the specification and insert in lieu thereof the following amended replacement paragraph:

FIG. [[35]] 36 is a somewhat diagrammatic perspective view of an integrated hand-held bar code processing device capable of automatic scan and data display and

which may incorporate features shown in the second and third figures of incorporated application USSN 07/136,097;

Please delete the paragraph located on page 9 at lines 25-26 of the specification and insert in lieu thereof the following amended replacement paragraph:

FIG. [[36]] 37 is a somewhat diagrammatic top plan view of the integrated scanner and terminal device of FIG. [[35]] 36;

Please delete the paragraph located on page 9 at lines 27-29 of the specification and insert in lieu thereof the following amended replacement paragraph:

FIG. [[37]] 38 illustrates a mechanical and electrical type of coupling which may be utilized for automatically coupling a scanner such as shown in FIGS. [[32,]] 33, 34, 35, or FIGS. [[35,]] 36, 37, with a universal mount such as shown in FIG. [[21]] 35;

Please delete the paragraph located on page 9 in line 30 and on page 10 in line 1 of the specification and insert in lieu thereof the following amended replacement paragraph:

FIGS. [[38 and]] 39 and 40 correspond with the first and twelfth figures of incorporated USPN 4,877,949;

Please delete the paragraph located on page 10 at lines 2-4 of the specification and insert in lieu thereof the following amended replacement paragraph:

FIG. [[40]] 41 is a diagrammatic illustration of a laser diode deflected beam bar code scanner such as may be employed in any of the scanner configurations disclosed herein including those of FIGS. 33-35 and 36-37 ~~32-34 and 35-36~~;

Please delete the paragraph located on page 10 at lines 5-6 of the specification and insert in lieu thereof the following amended replacement paragraph:

FIGS. ~~41A, 41B and 41C~~ 42A, 42B and 42C show electrical waveforms on a common time axis for explaining an exemplary mode of operation of the laser scanner of FIG. [[40]] 41;

Please delete the paragraph located on page 10 at lines 7-9 of the specification and insert in lieu thereof the following amended replacement paragraph:

FIGS. ~~42A and 42B~~ 43A and 43B show electrical waveforms on a common time axis for illustrating operation of the laser scanner of FIG. [[40]] 41 with modulated pulses of light and a tuned detector/amplifier system;

Please delete the paragraph located on page 10 at lines 10-12 of the specification and insert in lieu thereof the following amended replacement paragraph:

FIG. [[43]] 44 is a diagrammatic plan view showing the path of deflection of the laser beam for the scanner of FIG. [[40]] 41, and showing a central angular range of the laser beam path wherein the beam is to be used as a proximity sensor; [[and]]

Please delete the paragraph located on page 10 at lines 13-16 of the specification and insert in lieu thereof the following amended replacement paragraph:

FIG. [[44]] 45 is a diagram for illustrating the optical sensing area as is defined by a field of view of a lens system, such as from the use of a typical solid state video imaging array and a lens system with a magnification ratio of ten to one, in a hand-held optical reader in accordance with the present invention;

Please delete the paragraph located on page 10 at lines 17-23 of the specification and insert in lieu thereof the following amended replacement paragraph:

FIG. [[45]] 46 is a diagrammatic illustration of a preferred form of a hand-held optical reader according to the present invention, arranged so as to have its optical sensing area or field of view completely encompassing the machine-readable code (e.g. bar code) or human-readable information (e.g. line or lines of text) on a label so that a complete instantaneous optical image thereof is projected onto an area array of photosensors within the reader and may be converted by the reader into digital image data and stored in a processor memory of the reader;

Please delete the paragraph located on page 10 at lines 24-27 of the specification and insert in lieu thereof the following amended replacement paragraph:

FIG. [[46]] 47 is a block diagram illustrating a typical logic arrangement of a microprocessor circuit and major functional components as are typically associated with such a circuit, and further illustrating a preferred interface between the array of photosensors of the reader as referred to in FIG. [[45]] 46 and the microprocessor;

Please delete the paragraph located on page 10 at lines 28-30 of the specification and insert in lieu thereof the following amended replacement paragraph:

FIG. [[47]] 48 is an illustration of a stacked bar code and of one of the manners in which a field of view of the optical reader is indicated to a user to facilitate alignment of the field of view with a label bearing indicia such as the stacked bar code;

Please delete the paragraph located on page 11 at lines 1-3 of the specification and insert in lieu thereof the following amended replacement paragraph:

FIG. [[48]] 49 is an illustration of an alternate manner for indicating to a user of the optical reader the field of view of the information gathering elements in accordance with the invention;

Please delete the paragraph located on page 11 at lines 4-5 of the specification and insert in lieu thereof the following amended replacement paragraph:

FIG. [[49]] 50 is an illustration of yet another manner for indicating the field of view of the optical reader;

Please delete the paragraph located on page 11 at lines 6-7 of the specification and insert in lieu thereof the following amended replacement paragraph:

FIG. [[50]] 51 shows a schematically simplified view of a light source and related linear optics for delineating the field of view of the optical reader as further described herein;

Please delete the paragraph located on page 11 at lines 8-10 of the specification and insert in lieu thereof the following amended replacement paragraph:

FIG. [[51]] <u>52</u> is a diagrammatic illustration showing the reader of FIG. [[45]] <u>46</u> and illustrating alternative embodiments relating to flashable light sources and aiming aids such as marker sources;

Please delete the paragraph located on page 11 at lines 11-13 of the specification and insert in lieu thereof the following amended replacement paragraph:

FIG. [[52]] <u>53</u> shows another embodiment for delineating to a user of the reader its field of view, also showing a stacked bar code label encompassed in a vertical orientation within the delineated field of view;

Please delete the paragraph located on page 11 at lines 14-16 of the specification and insert in lieu thereof the following amended replacement paragraph:

FIG. [[53]] <u>54</u> shows a variation of the embodiment of FIG. [[52]] <u>53</u> for delineating the field of view of the reader, also showing a stacked bar code label encompassed in a horizontal orientation within the delineated field of view;

Please delete the paragraph located on page 11 at lines 17-18 of the specification.

Please delete the paragraph located on page 11 at line 30 and on page 12 in lines 1-11 of the specification and insert in lieu thereof the following amended replacement paragraph:

The central processing unit and associated memory form the main control portion of the system. The other functional blocks of FIG. 1 [[maybe]] <u>may be</u> inputs or outputs with respect to the central processing unit. The central processing unit may be a microprocessor that executes the program to control the operation of the reader. The microprocessor acts as a microcontroller with the capability of sensing and controlling the functional elements of the bar code reader, and decoding the bar code as supplied from a bar code image sensor means 11. Where the reader is coupled on line with a host computer system, (for example by a host connection means in the form of a flexible cable), the decoded bar signal is transmitted to the host under the control of the central processing unit. The microprocessor is capable of static operation with shut-down for power conservation. Wake-up of the processor will occur when an operator actuates a scan switch 12.

Please delete the paragraph located on page 13 at lines 3-13 of the specification and insert in lieu thereof the following amended replacement paragraph:

In the embodiment of FIG. 1, an intensity sensor 14 is provided and may comprise a photodiode that will determine the relative amount of light exposure of the photosensor array 13. If [[if]] component 10 operates at sufficiently high speed, the signal from the intensity sensor 14 may be supplied exclusively to component 10 via an analog/ digital channel so that the control and processing means can determine the optimum point for

transfer of the bar code image signals to the shift register. Likewise, many CCD's now have an electronic shutter. In the foregoing example the sensor 14 could drive a circuit to condition the input and drive the CCD shutter pin (simple non-processor controlled exposure control). The shutter control line stops the photo-discharge of the internal CCD capacitors. This may be achieved electronically. Further exposure during the [[cycel]] cycle results in no further charge reductions (see, for example, FIG. 56).

Please delete the paragraph located on page 13 at lines 14-26 of the specification and insert in lieu thereof the following amended replacement paragraph:

In a presently preferred implementation, however, the intensity sensor [[mean]] means 14 is directly coupled with the hardware control circuits of the flashable illuminator means and of the bar code image sensor means, and this is indicated by dash lines L1 and L2 in FIG. 1; in this case, line L is used only so that the processor component 10 is advised that a flash has actually occurred. In a preferred embodiment wherein a flashable illuminator 15 is driven by capacitor discharge current, a component 16 may effect interruption of the flow of current from the capacitor based directly on the signal supplied via L1 from intensity sensor 14. In this way, energy is conserved, and recharging of the capacitor speeded up. Component 16 may comprise a flash current interrupter switch means, e.g., a solid state switch which is controlled to interrupt discharge of the capacitor of high voltage generation unit 17, and thus, to terminate the flash of light from the flashable illuminator 15 when intensity sensor 14 indicates that adequate reflected light has been received from a bar code.

Please delete the paragraph located on page 16 at lines 20-30 and on page 17 at lines 1-9 of the specification and insert in lieu thereof the following amended replacement paragraph:

Component 120 in FIG. 1 represents audio and visual status indicators for facilitating operation of the reader unit. For example, a red-light-emitting diode indicator may be energized whenever a thumb actuator controlling read enable switch 12 is pressed and the reading distance sensor means determines that a bar code label is beyond the maximum reading distance of the reading distance adaptation means 20. At such a distance outside of the operative reading range, the lens adjustment motor 103, FIG. 3, follows an optical path as indicated at 64, 80, 81 and 60 in Figure 3 by virtue of the arrangement of mirrors 82, 83 and 84. These mirrors [[cire]] are fixed relative to reader housing 86, while a lens barrel 90 carrying optical lenses is axially adjustable relative to the reader housing. Also preferably forming part of the adjustable lens barrel assembly 90 are an infrared rejecting filter 97 and a rectangular aperture element analogous to that of USPN 4,570,057. For the sake of diagrammatic indication, barrel assembly 90 is shown as having a series of gear teeth 101 meshing with a worm gear drive 102 which is driven from an adjustment motor 103 via a right angle drive coupling assembly 105. The barrel assembly 90 may have a range of adjustment so as to accommodate bar code labels closely adjacent to the frontal window 33 and at progressively greater distances in front of the window 33 up to reading distances of at least three inches. In FIG. 3, a bearing for the shaft of worm gear 102 is indicated at 111. Guide means for lens barrel 90 are indicated as comprising flanges such as 112 for riding in cooperating slot-like low friction guideways such as 114.

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Please delete the paragraph located on page 19 at lines 23-30 and on page 20 at lines 1-13 of the specification and insert in lieu thereof the following amended replacement paragraph:

In the reading of a highly curved bar code label, a plurality of reflected light intensity sensors such as 50, 51 and 52, FIG. 4, may be successively activated in successive flashes of the illuminator means 15, the intensity sensors automatically controlling successive integration times of the bar code image sensor [[I1]] 11, according to the ~~an,erage~~ average intensity of reflected light from respective different segments of the curved bar code. Respective segments of a curved bar code label 131 have been indicated at 150, 151 and 152 in FIG. 2. In a first flash illumination of label 131, intensity sensor 51 might measure the reflected light from a bar code segment 151 on the label and cause transfer of the bar code image signals to a receiving means such as a CCD shift register after an integration time optimum for the reading of bar code segment 151. In a second flash quickly following the first, the intensity sensor might control integration time so as to be optimum for the bar code segment 152. Then in a third flash illumination of the bar code 131, the central intensity sensor 50 could control integration time. The control and processing means 10 would then assemble readings for bar code segments 151, 152 and 150 from the successive flashes of illuminator means 15 to determine if a valid total reading had been obtained. If not, a further succession of three flashes of the illuminator means could be enabled, with the indicator beams 28, 29 being turned on in the interval while proper high voltage was building up for the further series of flashes. (Three capacitors of component 17, FIG. 1, could store charge and be

discharged rapidly in succession to produce three flashes in rapid sequence without any delay for capacitor recharging.)

Please delete the paragraph located on page 20 at lines 14-24 of the specification and insert in lieu thereof the following amended replacement paragraph:

For the case of a highly curved bar code label such as indicated at [[1311]] <u>131-1</u> in FIG. 2, distance sensors 38-1 and 38-2 might indicate that the margins of the bar code would be out of focus. In such a case, as previously mentioned in the introduction to the specification, the processor 10 could be programmed to flash both tubes 35 and 36 with the adjustment means 40 controlled according to the distance reading D2 as sensed by the distance measurement means 38. Thereafter, control of the adjustment means 40 would be related to a distance such as indicated at D22 in FIG. 2 so that marginal portions of the label 131-1 would then be in focus. With the new focus automatically established, tubes 35 and 36 could be again activated so as to read the marginal portions of the bar code on label 131-1, whereupon the processor component 10 could assemble the two readings pixel by pixel to establish a complete bar code.

Please delete the paragraph located on page 21 at lines 6-9 of the specification and insert in lieu thereof the following amended replacement paragraph:

Along with the multiple readings of a highly curved label such as <u>131-1</u> [[13 1-1]], the processor 10 could also take account of distance measurements from components 38, 38-1 and 38-2, in assembling e.g., pixel by pixel, a complete bar code from the successive readings.

Please delete the paragraph located on page 23 at lines 7-30 and on page 24 at lines 1-12 of the specification and insert in lieu thereof the following amended replacement paragraph:

The third interval might be driven by means of a third capacitor connectable to both tubes 35 and 36 so that the three reading intervals could be executed in quick succession. Where a first reading operation is unsuccessful for example, because of an incorrect position of the adjustable lens means 30, component 10 may be programmed to immediately turn on the label guide indicator means 21 during the interval when the capacitor means is being automatically recharged for a succeeding second reading operation. During the recharging operation, e.g., for a time interval of about ninety milliseconds, the label guide indicator means 21 will remain on, and the reading distance sensor means 22 will repeatedly measure the distance to the bar code label with an essentially continuous corresponding control of the lens means [[mean]] by the focus adjustment means 40. As soon as the component 10 determines that each of the capacitor means has attained the desired voltage for a further flash illumination, the image sensor means 11 will be again cleared and a new reading operation automatically carried out. In each reading sequence as before, one or more of the intensity sensors 50, 51 and 52 determines the time point at which the image signal of the photodiode charge cells is transferred to the CCD shift register stages. Also, after the appropriate integration interval or intervals, the current interrupter switch 16 for a respective capacitor discharge circuit is operated to terminate the capacitor discharge and extinguish the flash of a respective illuminator means. The data resulting from each integration interval is

transferred out of the image sensor means 11 via the CCD shift register for processing in component 10. When a successful reading is determined by component 10, the corresponding indicator of component 12 will be activated, and for example, it will be necessary to release switch 12 before a further reading operation can be initiated. Where a given reading operation is unsuccessful, the programming of component 10 may be such that the reading operation is automatically repeated up to, for example, ten times. Should ten successive reading attempts be unsuccessful, component 10 would produce ~~thecorresponding~~ the corresponding bad read condition indication via component 120, and again, for example, it might be necessary for the operator to release switch 12 before [[15]]a further read sequence could be initiated. By way of example, once a valid bar code reading was obtained, the programming could be such that component 10 could establish communication with a host computer system, for example, an accompanying portable computer, or an integral host computer. Where no further actuation of the switch 12 occurs after a valid reading, the system may [[be-]] be programmed to automatically power down so that a battery means, for example, within reader housing 86, would be subject to the minimum drain during inactive intervals of the reader system.

Please delete the paragraph located on page 25 at lines 22-30 and on page 26 at lines 1-13 of the specification and insert in lieu thereof the following amended replacement paragraph:

The microcontroller of component 10 could drive each signal line directly, but the bit manipulation capabilities of most presently available processors would provide a very slow preparation and reading cycle time for the ~~forthe~~ case of a bar code image sensor

size of 5000 pixels. The circuit shown in FIG. 5 uses an eight megahertz clock 220, FIG. 6, to produce a controlling sequence which can clock out two pixels every microsecond from component. The circuit of FIG. 6 allows continuous operation such as is needed to quickly prepare the component 11-1 for a reading operation and also allows single-stepping operation to give the analog to digital converter channels sufficient time to input each pixel. The circuit of FIG. 6 allows each shift pulse to be synchronized with the clock rate at line 215, FIG. 5, (the 0110 clock line) for proper operation. It [[it]] is desirable to operate at the highest frequency possible without unduly complicating or increasing the size of the driver circuitry[[,]]. Thus, an image sensor with a higher maximum clocking rate could be selected. In FIG. 6, reference characters 6A through 6F have been applied to various lines and the corresponding related waveforms have been indicated in FIGS. 6A through 6F, respectively, by way of explanation of the operation of FIG. 6. The outputs of FIG. 6 form respective inputs to drivers 201, 203 of FIG. 5 as indicated by the respective designations of the corresponding lines in these figures. In FIG. 6A, reference numeral 231 indicates the first positive transition of the clock waveform after the signal (supplied by the aforementioned ~~MC68HC 1 1~~ MC68HC11 microcontroller) goes low, or the signal line SCYC goes high. In FIG. 6F, the signal SH follows the dash line 232 if the signal SHEN is true. As indicated at 241-244 by dash lines, the cycling continues if the signal IVT remains low.

Please delete the paragraph located on page 31 at lines 4-30 and on page 32 at lines 1-8 of the specification and insert in lieu thereof the following amended replacement paragraph:

In another example, a plurality of mirrors analogous to mirror 82 could be arranged at respective different distances from the window 33, such that all of the image paths would traverse the same lens barrel 90 but then would be ~~f ocused~~ focused onto respective ~~dif ferent~~ different image sensors, [[f or]] for example, by means of multiple mirrors analogous to mirror 84 but located at respective different distances from the center of lens barrel 90. Such a multiple image path lens system would, for example, provide paths within the reader of length greater than the length of the image path at 64, 80, 81, 60 of FIG. 3, and also optical image paths in the housing 86 of length shorter than the length of the path 64, 80, 81, 60. The various image paths together could provide the result that the depth of field for each respective image path would overlap with the depth of field of other of the image paths, so that the single lens barrel such as 90 would cover images ~~anywhere~~ anywhere within a range in front of a window 33 corresponding to a multiple of the depth of field provided by the image path 64, 80, 81, 60 by itself. Thus, through proper multiple mirror placement and folding of the optical image paths, a common lens barrel assembly could focus on multiple depths in front of the reader, the processor component 10 selecting the respective image sensor or image sensors from which to assemble the pixels of a complete bar code reading. FIG. 14 diagrammatically illustrates the optical components of such a multiple image path single lens system, which includes a window 33C, flash tube housing 75C, mirror 83C, mirror 84C, lens barrel 90C and sensor housing 124C, corresponding to components 33, 75, 83, 84, 90 and 124 of FIG. 3, and components 33A, 75A, 83A, 84A, 90A and 124A of FIG. 13. The system of FIG. 14 further includes a plurality of mirrors 82C, 82D, 82E, 82F and 82G at respective different distances from the window 33C, such that all image paths traverse the same lens

barrel 90C, to be focused on different image sensors of an array 13C which are within a housing 124C and which are connected to control and processing means 10C operative to select the respective image sensor or image sensors from which to select the pixels of a complete bar code reading. With such a multiple image path single lens system arrangement, the lens system arrangement could remain stationary, avoiding the requirement for a motor and movable parts, and also providing for instantaneous reading of a label whose various segments came within the depth of field of one or more of the respective image paths and associated image sensors. Further, distance measurement means 38 may be coupled with control and processor means 10C in order to provide range information to processor 10C such that the proper focal path C, D, E, F, or G may be selected. This may be accomplished by simply allowing the processor 10C to operatively select a particular line 13C of the two-dimensional array 124C.

Please delete the paragraph located on page 34 at lines 10-17 of the specification and insert in lieu thereof the following amended replacement paragraph:

In the specific example of FIG. 18, a common filter element X81 having spectral characteristics as indicated at X51 or X61 may cover all of the first light sensors such as X31A and X31B of the array, while a common filter element X82 having the spectral transmission properties X52 or X62 may be associated with the second light sensors of the array such as indicated at X32A and X32B. By way of example, window X73 and filter elements X81 and X82 may form part of the end face X71 of the housing of the laser bar code reader unit of FIG. 18, other portions of the end face X71 being opaque, so

that light ~~maX onlX~~ may only enter or exit the housing through window X73 and filter elements X81 and X82.

Please delete the paragraph located on page 34 at lines 27-30 and on page 35 at line 1 of the specification and insert in lieu thereof the following amended replacement paragraph:

In the example of FIG. 19, each detector may have an individual filter element such [[a]] as filter elements X42A and X42B associated with respective second light sensors X32A and X32B. In FIG. 19, end face X71 may provide a common optical window for transmitting the laser beam X111 at a region such as X73, FIG. 18, and for admitting reflected light at regions such as indicated at X81 and X82 in FIG. 18.

Please delete the paragraph located on page 36 at lines 12-19 of the specification and insert in lieu thereof the following amended replacement paragraph:

In one embodiment according to FIG. 21, light is transmitted from light source X120 to a light port X144 via optical fibers X145, and reflected light is transmitted via respective optical fibers such as indicated at X146 and X147 which terminate at a small-area central region of light port X144. [[BY]] By way of example, the reflected light transmitting fibers such as X146 and X147 may be essentially uniformly distributed at the port X144 over a central circular area which is small in comparison to the size of a minimum width bar of a bar code to be scanned, so that ambient light has less effect on resolution than where the size of the incident light spot is relied upon to define scanning resolution.

Please delete the paragraph located on page 39 at lines 13-30 and on page 40 at lines 1-3 of the specification and insert in lieu thereof the following amended replacement paragraph:

In a preferred symbol reading mode, the scanner does not revert to initial mode automatically when a single bar code line has been successfully read. In one example with a single line bar code scanner, the scanner may be manually displaced to read a stacked bar code. In this example, a beeper or other indicator will ~~indicated~~ indicate a successful reading of a first line of the stacked bar code whereupon the scanner remains in symbol reading mode and the operator ~~maymanually~~ may manually tilt the scanner to read further lines of the stacked bar code. If desired upon each successful read, the marker spots, e.g., X13-41 and X13-42 for a single line scanner may be flashed after each reading of the same bar code line (e.g. with the photodetector electronics deenergized during such flashing) so as to ~~indicated~~ indicate to the operator that the scanner is reading the same line and ignoring (not storing) the result of such reading. For example, if the scanner mirror has ten facets and is rotated at ten revolutions per second, and if after a successful read of a line the scanner performs nine scans with no new bar code number being read, on the tenth scan the photodetector electronics would be automatically deenergized and the marker spots X13-41 and X13-42 flashed. The system would then execute nine further scans with the photodetector system activated. If the further scans revealed a non-bar-code-reading condition consistent with scans occurring between bar code lines, the tenth and further scans could all be with the photodetector active. After, for example, ten consecutive non-bar-code scans, the scanner might accept a bar code

reading of the same value as the last reading accepted, (the operator being informed to avoid returning to a ~~previous~~ previously read label unless such label was to be read and entered a second time).

Please delete the paragraph located on page 42 at lines 12-19 of the specification and insert in lieu thereof the following amended replacement paragraph:

Normally in this embodiment, the number of laser diode energizing frequencies need not be large since a major purpose in not using the maximum safe frequency at all times is to conserve battery power. Another objective of adjusting the laser diode energizing frequency would be to avoid saturation effects when reading close-in bar code ~~sXmbols~~ symbols. Battery power may be coupled to the scanner through the belt mount therefor where the battery pack is supported on the belt, for example. The scanner may contain its own battery pack, e.g. in the handle, where it is to be operated detached from the belt mount in a completely hand-supported mode.

Please delete the paragraph located on page 44 at lines 12-20 of the specification and insert in lieu thereof the following amended replacement paragraph:

FIG. [[23]] 24 shows the beam pattern comprising beam spots X1015 and X1015A at a reference plane indicated at X1020 for the case of two circular beams of equal diameter separated by a center to center distance approximately equal to the beam diameter. With this embodiment one half-power beam could be used for close-in scanning, and an automatic distance measurement could control selection of one or two half-power beams (e.g. in a default operating status) for symbol decoding mode and/or

proximity detect mode. The distance measurement could be based on time between marginal marker spots in comparison to bar code line width, or could be based on the reading distance sensor means Y25-22, FIG. 52, or X26-1, FIG. 40.

Please delete the paragraph located on page 46 at lines 4-13 of the specification and insert in lieu thereof the following amended replacement paragraph:

FIG. 28 indicates the use of a linear [[arraX]] array X1462 of photodiode elements X1463 in front of a straight optical collector X14-54 (by way of example). A printed circuit board X1464 may carry the array or arrays and conduct the parallel outputs to suitable processing circuitry such as described with reference to FIGS. 29 and 30. For a uniformly straight reflector configuration (e.g. as represented at 76 in the third figure of incorporated USSN 07/422,052, with the sensor arrays extending along the axes of elements 35, 36, the second figure), the reflector may comprise two or more straight sections (analogous to elements 35, 36 the second figure of Ser. No. 07/422,052), with cooperating straight line array sections such as 1462. Each reflector is preferably shaped for optimum efficiency at the maximum range of the scanner.

Please delete the paragraph located on page 47 at lines 4-8 of the specification and insert in lieu thereof the following amended replacement paragraph:

The methods previously described may be used in addition to bandpass filters at X1585, X1586, or in places thereof. Thus the arrays X1562, X1563, and X1582, X1583 [[maX]] may be covered by respective filters as represented in FIG. 16 or FIG. 17, so that

the respective differential outputs from the upper and lower photodetector arrays each tends to minimize the effect of ambient light.

Please delete the paragraph located on page 47 at lines 9-14 of the specification and insert in lieu thereof the following amended replacement paragraph:

~~BatterX~~ Battery power X1590 can be coupled to the scanner from the subassembly X1520 via external contact bars embedded in housing X8-10 and cooperating spring fingers analogous to the fingers (632, seventeenth figure or 801, twenty-fifth figure of incorporated USSN 07/347,602). In this case, photodetector output signals from detectors X1562, X1563, X1582, X1583 could also be coupled via such spring fingers and housing ~~contracts~~ contacts to the interior of the scanner.

Please delete the paragraph located on page 48 at lines 9-22 of the specification and insert in lieu thereof the following amended replacement paragraph:

The general prior art for actuation of most CCD and laser scanners has required the use of an actuation switch or trigger to initiate operation of the scanner. This method has been used by NORAND ~~CORPOTATION~~ CORPORATION for array type readers as shown by incorporated USPN 4,894,523. See also USPN 4,282,425 (filed July 25, 1979 and also disclosing proximity detection). Such prior art scanners depend on the operator pulling the trigger or depressing the actuation switch at the correct time, presumably when the reader is correctly positioned in front of the label. If this is the case, the reader will be activated, perform the read and automatically terminate operation quickly and efficiently and subsequently shut down to conserve power. In the case of moving beam

laser scanners, it is probably more likely that the operator will press or activate the trigger to generate the reassuring "red stripe" or line and then position the reader so that the "red stripe" reading beam crosses all of the bars for a proper read. When the laser scanner is used in this way, obviously significant power is wasted operating the laser and the motor when no target is available.

Please delete the paragraph located on page 49 at lines 3-6 of the specification and insert in lieu thereof the following amended replacement paragraph:

Given some combination of a trigger and a proximity sensor where the trigger causes the proximity sensor to begin operating and the successful sensing by the proximity sensor of a target label causes the scanner to operate, it may be possible to further improve the power efficiency of a scanner such [[s]] <u>as</u> a moving beam laser type.

Please delete the paragraph located on page 49 at lines 8-18 of the specification and insert in lieu thereof the following amended replacement paragraph:

The most obvious and direct approach to sensing is to utilize the combination of a light source and light detector where a reflective label causes a signal to be received by the detector. The general arrangement is shown in FIG. 41. In the general case, proximity is determined by the level of the signal as received by the light detector X27-10. Experience has shown that this has some inherent problems such as noise, ambient light, and device offsets or errors. Several methods may be employed to improve the detection of the proximity sensed signal. One method might be to pulse the light source with a narrow, high intensity pulse and look at the detector at that time in comparison to

the non-energized condition. The signal waveforms might be represented as shown in FIGS. 42A, 42B, and 42C. This method allows variation in ambient light or noise to be removed differentially as well as accounting for sensor device [[ad]] and circuit variations.

Please delete the paragraph located on page 49 at lines 19-25 of the specification and insert in lieu thereof the following amended replacement paragraph:

Additionally, the ambient light level may be determined and optically readable information sets may be ~~loacted~~ located by (1) taking a first reading (laser + ambient) and producing a first signal, (2) taking a second reading (ambient only) and producing a second signal, (3) producing a third signal corresponding to the value of the first signal less the second signal, and (4) comparing the ~~fourth~~ third signal to a predetermined threshold value in order to determine whether a bar code is present and whether the scan driver should be activated.

Please delete the paragraph located on page 50 at lines 12-23 of the specification and insert in lieu thereof the following amended replacement paragraph:

In another preferred exemplary embodiment of the present invention optically readable information sets may be located and read with minimal power usage by (1) positioning the scan driver such that laser light from a laser is directed along a laser beam path generally coordinated with an aiming axis of the scanner; (2) modulating the laser light; (3) pulsing the modulated laser light such that a modulated laser light beam is reflected from the positioned scan driver and directed along a path generally coordinated

with an aiming axis of the scanner such that the modulated laser light beam is at least ~~partiallX~~ partially reflected from a potential optically readable information set; (4) reading the reflected modulated laser light beam by a reading sensor and generating an output signal in response thereto; (5) filtering the output signal to remove ambient noise; and (6) activating the scan driver and the laser if the filtered signal exceeds a predetermined threshold value.

Please delete the paragraph located on page 52 at lines 5-9 of the specification and insert in lieu thereof the following amended replacement paragraph:

The proximity signal processing mechanism might be either of the types described previously, or it might be processed directly through the actual scan signal processing circuits. In the "label-seeking" mode, the bandwidth of the detecting amplifier need not be nearly as high as in the active scanning mode, so bandwidth modification may be ~~emploXed~~ employed to adjust the amplifier bandwidth according to the mode in progress.

Please delete the paragraph located on page 68 at line 30 and on page 69 at lines 1-10 of the specification and insert in lieu thereof the following amended replacement paragraph:

Enhanced exposure control may be achieved by averaging the reflected light from an optical information set during a reading operation and then terminating integration of the reflected light from an optical information set after an optimum measurement sample of the reflected light image has been received. For example, this may be achieved by

utilizing a charge coupled device (CCD) or the like with an electronic shutter with a PIN photodiode. A voltage is output when the ~~decive~~ device is exposed to light. The PIN photodiode charges capacitor C_1 through R_1. Resistors R_2 and R_3 set a threshold value for the comparator K_1. Once the charge on C1 exceeds the threshold, the comparator changes states. The R_4, C_2 pair controls timing of the base drive to the transistor T_1. The latch and/or one shot (monstable multivibrator) condition the output of the circuit and adjust signal compatibility to the CCD. The output signal terminates further exposure during integration time (FIG. 56).

On page 74, please delete the first full paragraph following the heading entitled "Abstract of the Disclosure," lines 2 through 5 inclusive, and insert in lieu thereof the following paragraph as the new abstract:

A method and apparatus for optically reading information is disclosed. The apparatus includes a photosensor, and a reading system capable of generating a decoded signal regardless of the orientation of the optical indicia relative to the photosensor. The method includes steps of positioning an optical reader containing a photosensor, imaging an information area onto the photosensor without requiring prior angular movement of the reader, and generating a digital representation of content imaged from the information area onto the photosensor for any angular relationship between orthogonal axes of the information area and the pixel axes of the photosensor.